

INTERLOCKING DIRECTORATES AND DIFFERENT POWER FORMS: AN EXPLORATIVE ANALYSIS IN THE ITALIAN CONTEXT

Salvatore Esposito De Falco ^{*}, Nicola Cucari ^{**}, Federica Di Franco ^{*}

^{*} University of Rome "Sapienza", Italy

^{**} Corresponding author, University of Salerno, Italy;

Contact details: University of Salerno, Via Giovanni Paolo II, 132 – 84084 – Fisciano (SA), Italy



Abstract

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The purpose of the present paper is twofold. The first is to update the contribution by Drago et al. (2011) about cross-shareholdings and interlocking directorates in Italian listed companies (FTSE MIB) to 31 December 2016 and to reinforce theory of enlarged collusion. The second is to find how interlocking directorates can contribute to understanding the power structure. By using the social network analysis, we map the network structure of interlocking boards and employ centrality measures like degree, eigenvector and betweenness centrality along with the network density and average degree. We interpret eigenvector centrality as a measure of "effective power" of the connections because it can be seen as a weighted sum of not only direct connections but indirect connections, while betweenness centrality as a measure of "potential power" because it is a proxy of the volume of information that passes through the nodes. In this way, we provide a framework for selecting Italian firms with effective and potential power – around whom interactions and processes can be traced and analysed. In addition, we find that the position assumed by the controlling group of the Mediobanca Galaxy is definitely downsized.

Keywords: Interlocking Directorates, Corporate Governance, Social Network Analysis, Corporate Networks, Power Elite, Power Structure, Italian System

1. INTRODUCTION

Interlocking directorates (ID) have been studied for quite a long time now and an extensive body of literature is available discussing the pros and cons of interlocking directorates (for a review see Mizruchi, 1996; Lamb & Roundy, 2016). Despite the interlocking directorates, the fact that a person sits on two or more corporate boards, has attracted some criticism (Dooley, 1969; Burris, 2005), it is still common in many developed countries, even if recent studies have documented a general declining trend in national board interlock networks (Chu & Davis, 2016). A great number of researches on a variety of disciplines (management, sociology and finance) has highlighted the importance of interlocking directorates and there is a growing body of research reporting that board interlocks have positive or negative impacts on a variety of corporate outcomes.

Interlocking directorates can be an important source of information and a mechanism for gaining a competitive advantage; in this way they can improve firm's performance, innovative strategy, decision making such technology and market trends (Ozmel et al., 2013; Mazzola et al., 2016). More generally, companies can benefit from interlocks in terms of information advantages, social relationships, quality and reputation of the directors and monitoring of business relationships (Larcker et al., 2013; Simoni & Caiazza, 2012; Loderer & Peyer, 2002). But they can also cause potential problems firms should be aware of, because they could have some negative effect on the economic system (Crocchi & Grassi, 2014), on the value of firm and this out of different reasons such as distraction, less attention and the resources members dedicate to the boards they sit on (Fich & White, 2003; Fich & Shivdasani, 2006). In addition, the interlocked directors may be an instrument to extract private benefits at the expenses of minority

shareholders (Silva et al., 2006), thus destroying its value. Focusing the attention on the Italian case, interlocking directorates is not a new phenomenon and it has been an important characteristic of Italian capitalism (for an overview concerning the relevance of interlocking directorates in the analysis of Italian corporate governance, see Rinaldi & Vasta, 2005). Italian corporate governance, for its characteristics such as ownership concentration, weak investor protection, state ownership and presence of pyramidal structures, is an ideal setting and there are several articles concerning this topic under multiple perspectives. Therefore, the purpose of this paper is twofold: first to analyze the Italian network of interlocking directorships so to verify its structural features, in order to find one or more “galaxy of firms”. In this regard, we want to contribute to the literature on directors interlocks by examining the profile of the main board interlockers that the Italian director network is formed of and by verifying to what extent director networks correspond to ownership networks, comparing and updating the results by Drago et al. (2011). Second, using social network analysis (SNA), we define different power form of interlocking directorates and then operationalize these concepts with reference to centrality metrics. In this way, the paper does not only establish, whether the governance of the Italian listed companies (FTSE MIB) is based on a stable structure over time, but it also aims at understanding, how interlocking directorates can contribute to understanding the power structure. Therefore, the following research questions were raised: *how interlocking directorates can produce different power forms that can influence the genesis of power coalitions?*

As noted by Croci and Grassi (2014), we are dealing with an important issue since different predictions are possible on the effect of network centrality on the corporate outcome and since interlocking directorates could contribute to collusion. By investigating not only the “number” of graph edges but also the “importance” of each individual edge, our aim is to capture the different “power form” by interlocking directorates. A firm’s position in the interlocking directorate plays an important role in determining its strategies and structures (Connelly & Van Slyke, 2012). Social network analysis is adapted to visualize the network structure of interlocking directorates (Freeman, 2004). This study is therefore first and foremost an update of the paper by Drago et al. (2011) and it investigates, whether the existence of a galaxy of Mediobanca is confirmed in Italy and it also aims at identifying any powerful firms in this network structure. Secondly, this paper aims at measuring the power forms of interlocking directorates. This will allow us to better explain the role of interlocking directorates in the Italian scenario.

The paper is organized as follows. Section 2 presents an overview of the theoretical background of interlocking directorates, offers a brief literature review of interlocking directorates, focusing on previous studies of the Italian case, and, finally, derives the hypotheses to test. Section 3 describes the methodology and data. Results are presented in Section 4 and discussed in Section 5. Section 6 concludes.

2. THEORETICAL BACKGROUND, LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Theoretical background

The literature on interlocking directorates is huge and fragmented as fragmented is the multifaceted nature of this topic, which often involves a mixture of several disciplines insisting on the field and different levels of analysis (Caiazza & Simoni, 2015). Academic literature has usually used two units of analysis (individuals/ firms) and two theoretical lenses of analysis (individuals/institutions) to explain interlocking directorates and their existence has been outlined in different ways (Romano & Favino, 2013). According to Lamb and Roundy (2016), the background of interlocking activities under firm’s perspective consists of: i) resource-seeking: interlocks, in particular in financial sector, will help their firms create connections with other organizations to minimize environmental uncertainty; ii) monitoring: firms can also engage in interlock activities in an attempt to improve their monitoring ability; iii) signaling: a firm’s board of directors can also be used to send a signal to current and potential investors; iv) accessing human capital: a director can also be appointed to an interlocking position because of his or her particular human capital. From an interlocking director’s perspective, it is possible to find two antecedents: career advancement and increased social ties. In the first case, executives can join multiple boards to advance their career and extend their connections; in the latter, interlocking directors sit on each other’s board and socialize in the same elite clubs (e.g. country clubs). More generally, there are many reasons for the origin of interlocking directorates (Mizruchi, 1996; Koenig et al., 1979) but Drago et al. (2011), for the Italian context, formulate the Enlarged Collusion Model. According to the authors, enlarged collusion model take place in companies that are characterized by concentrated ownership and that do not necessarily belong to the same business sector. Under the Enlarged Collusion Model, the choice of interlocking directorates is made by controlling shareholders with the purpose to have passive company boards with respect to shareholder expropriation (Drago et al., 2015).

2.2. Italian literature review

The Italian scenario (and in particular that of the financial sector) is characterized by the phenomenon of interlocking directorates in an “extremely pervasive” way (Santella et al., 2009). The phenomenon of interlocking directorates in Italy was already relevant at the beginning of 1920 (Luzzatto Fegiz, 1928) and for a long time, interlocking directorates have been an important feature of Italian capitalism (Vasta & Baccini, 1997; Rinaldi & Vasta, 2005, 2009, 2012; Baccini & Marroni, 2016). Over the last few years, several studies have been investigating the interlocking directorates in Italy and several of them – based on empirical evidence – confirmed that Italy is pervaded and permeated by interlocking directorates (for a brief review, see Table 1).

Table 1. Brief of Italian literature review

Author(s)	Year (s) analysed	Aim	Results	Used Social Network Analysis	Presence of cluster	Cluster's Main features
Baccini and Marroni (2016)	2010	Financial sector analysis: comparison between Italian and US legislation	The outcome of the ID regulation in Italy is a fragmentation of the financial sector network	Yes	Yes	The existence in Italy of cohesive clusters is due to the family-based capitalism; Mediobanca is the central node of the network
Barbi (2000)	1991-1998	Assessment of a connection between reduction of voting rights/agreements and the increase of ID as informal agreements	ID as the most effective tool. Reduction of density and increase of the asymmetric distribution of links.	No	No	
Battiston and Catanzaro (2004)	1986-2002	Decision-making processes dynamics: heard behaviour	The influence is proportional to the number of ID between the concerned boards.	No	No	
Bellenzier and Grassi (2014)	1998-2011	Time evolution of interlocking directorates in Italy from 1998 to 2011 by means of dynamical networks	The key role played by few directors	No	Yes	Small connected components concentrated among the Blue Chips
Bianco and Pagnoni (1997)	1985-1995	ID extension	ID as a tool to strengthen and/or replace structural links	No	Yes	IN-IN Interlocking Directorates are more common in pyramidal groups
Croci and Grassi (2014)	2008	The link between ID and firm performance	The negative ratio between network centrality and firm value (main ground: high ownership concentration)	Yes	Yes	Presence of a Main component and 8 minor components
Di Donato and Tiscini (2009)	2002-2006	Bank-firm connections effects	Central role and greater advantage brought by ID to banks	No	No	
Drago et al. (2015)	1998-2007	The link between ID and firm performance	The negative effect of ID on firm performance; reforms were only partially effective on the short-term (density reduction, increased the key role of some actors)	Yes	No	
Fattobene et al. (2017)	1998-2013	What extent personal ties among the directors of Italian listed companies have changed after the financial crisis of 2008 and the introduction of the Interlocking Ban in 2011	ID stable features; increase of cumulation ratio due to the increase in the number of assignments to few directors. The ID is still functional to preserve control stability.	Yes	Yes	Cohesive and stable Clusters; removal of peripheral nodes.
Gambini et al. (2012)	2009	Analysis of network stability	The existence of a cohesive group of companies occupying a central position (directors belonging to the <i>most exclusive elite</i>)	Yes	Yes	Definition of clusters based on: Family control and Cross Shareholding network
Manzo et al. (2014)	2000-2012	Privatization effects on governance and network ID	State-owned companies feature the same heterogeneity in terms of governance as the other listed companies	Yes	Yes	Telecom: most connected and central node
Romano and Favino (2013)	2006-2010	The effects of the international crisis on ID network structure	Lower density and greater centrality and stability of few cliques	Yes	Yes	Identification of a larger subgroup having a higher number of members and a reduced number of IDs
Santella et al. (2010)	1998-2006	Analysis of network stability	The existence of the Lords of Italian Stock Market; the major 9 Italian family-owned companies have acquired 100 IDs in 9 years	Yes	Yes	The highest ID level is one of the Italian Blue Chips
Simoni and Caiazza (2012)	1998-2006	Analysis of both the structure and the evolution of interlocking directorates provides some relevant insights into the driving forces behind the competition among firms.	Financial sector: prevalence of a collaborative approach. Manufacturing sector: key firms act as brokers between players of different competitive arenas	Yes	Yes	Financial sector's network structure: concentrated and with a giant component (Mediobanca) Manufacturing sector' network structure: more key firms
Simoni and Caiazza (2013)	1999-2006	Network's dynamics and impact on system's competitiveness	Network stability and main firms turnover	Yes	Yes	In the given period a change in the key actors is observed and only a subset preserves its strategic position - Mediobanca, Assicurazioni Generali, Alleanza Assicurazioni

In sum, it can be observed that: cross-ownership and interlocking directorates are one of the most important sources of separation between ownership and control (Di Donato & Tiscini, 2009); there is a negative relationship between network

centrality and firm value (Croci & Grassi, 2014); the crisis seems to be a destabilizing factor of interlocking ties (Romano & Favino, 2013); collusive agreements represent the outcome of a system of interlocking directorates, which supports the

information exchange among holdings via their shared directors (Di Bartolomeo & Canofari, 2015); interlocking directorates seem to be instrumental to shareholder expropriation (Drago et al., 2015); interlocking directorates play a crucial role in ensuring the stability of the position of control of the biggest private companies and their connections with public ones (Rinaldi & Vasta, 2005) and finally interlocking directorates could be an instrument to improve the ability of the controlling shareholders to expropriate minority shareholders and this is frequent in large-size companies and less common among banks (Barucci, 2006). In addition, board members who serve on multiple boards exert both positive and negative effects on firm performance, and these effects depend on the firm's relative resources (Zona et al., 2015). More recently, Fattobene et al. (2017) investigate to what extent personal ties among the directors of Italian listed companies have changed after two events: 2008 financial crisis and the introduction of the Interlocking Ban in 2011 (Legislative Decree no. 201/2001 concerning financial firms). They describe the evolution and dimension of the phenomenon of interlocking directorship for all the Italian listed companies over the period 1998-2013 by using social network analysis and Principal Component Analysis. Results reveal that financial crisis has an impact on interlocking directorates through different channels and the final output of these forces is a general reduction of personal ties. In addition, findings suggest that the decrease of the cumulation ratio may also be related to the approval of Legislative Decree no. 201/2001, which discourages the presence of interlocked directors belonging to the same business group. The impact of this new law (Section 36 of Law Decree 201/2011¹) is studied also by Baccini and Marroni (2016). According to the authors, the law fostered two different interpretations: a narrower and a broader. The narrower interpretation of the law (which considers as the reference market of a financial firm the one in which it has the biggest share of revenues, according to the method elaborated by the Italian Stock Exchange) would leave the ID network substantially unaltered. A broader interpretation of the law (stating that all financial companies must be considered as competitors and thus be subjected to the law, since they offer the same goods and services -banking services, insurance and saving products- to customers) instead would completely modify the ID network for financial firms, with a final configuration totally similar to the one existing in US. Different authors study the evolution over time of interlocking directorates in Italy. For example, Bellenzier and Grassi (2014) study the evolution of interlocking directorates from 1998 to 2011 by recurring to dynamical networks. Their purpose is to assess, whether in Italy there is a connected and stable structure, due to the presence of directors with multiple mandates. The authors

find that, while in the German case all the biggest firms are connected to each other, the Italian situation is not characterized by a network core, but by small networks of companies, which in many cases are also very cohesive. Therefore, the Italian case features a stable disconnected small structure with intense ties, where every component has a cohesive structure, often submitted to the ownership control of few important families².

2.3. Hypothesis development

Based on the Italian literature review, one of the firms at the center of the Italian network is definitely Mediobanca (Santella et al., 2009; Drago et al., 2011, Gambini et al., 2012; Baccini & Maroni, 2016), which plays an important role among the Italian listed companies. In particular, Santella et al. (2009) and then Drago et al. (2011) coin the term "Mediobanca Galaxy" to identify a network of cross-ownerships involving all the companies that make up the Galaxy. According to Drago et al. (2011), Mediobanca Galaxy has undertaken an enhanced collusion through interlocking directorates that is functional to the expropriation by a small group of the Galaxy's controlling shareholders at the expenses of the minority shareholders of the Galaxy and possibly also of the other Blue Chips with which the Galaxy has established board interlocks in 2008. This strategic control has been kept until 2008 by Mediobanca Galaxy that has been extending its structural links network beyond its ownership structure or its specific industry sector. Therefore, based on the idea that the network of interlocking directorates determines the collective economic organization of the most significant companies of a country (Hall & Soskice, 2001), we suppose (H1) that: *"the network of Mediobanca Galaxy continues to play a central role in the Italian context"*.

If the firms are linked to each other by directors, selected for many reasons as highlighted above, they create a social network. In other words, the directors who sit in more than one board create a social network, in which two companies are connected directly if they share one or more members and indirectly if they share members with a third (Burt, 1979). Following a well-established tradition of research on interlocking directorates, we assume that the interlocking directorates are indicative of "power elite". According to Collins (2006, p. 6), power is always contained in an organizational form. In order to analyse which type of power and to answer our research question, we consider two measures: *eigenvector centrality* and *betweenness centrality*. According to Larcker et al. (2013), eigenvector centrality can be interpreted as capturing the notions of power and prestige, since a board can be defined as well-connected, when it is perceived to be prestigious and powerful, giving it a special advantage in obtaining resources, information and favours. Eigenvector centrality can also be seen as a weighted sum of not only direct

¹ The Law Decree 201/2011 (the "Save Italy" Decree, converted into the Law no. 214/2011) introduces the prohibition of interlocking directorates to the art. 36. The law introduces the prohibition on the directors of accepting or exercising same positions between firms in the credit markets, insurance and finance. The financial sector was the one that showed the greatest vulnerability with the 2008 crisis; so, the art. 36 aims to promote competition, fight the resulting concentration of control with a reduction in the links between the governing bodies and more generally those who exercise top functions in competing companies.

² At least 7 important families are possible to identify in the Italian scenario: Caltagirone family; De Benedetti family; Agnelli family; Benetton family, Ligresti family, Pesenti family; and Berlusconi family that reinforce the link between interlocking directorates and cross-shareholding in the viewpoint of power of Italian "salotto buono", meaning the "fine drawing room" of top industrialists and bankers that dominate Italy's economic life (Corrado and Zollo 2006; Messori 2007, Gambini et al., 2012).

connections but indirect connections of every length (Bonacich, 2007). Therefore, in line with Croci and Grassi (2014), we interpret this measure as an “effective power”. While betweenness centrality can be regarded as a measure of the extent to which an actor has control over information flowing between others (Newman, 2005). According to Sicilia et al. (2016), the betweenness centrality for node “i” is calculated by evaluating the number of times that “i” is in the shortest path between any other pair of nodes. As suggested by Pretorius (2014), Hanneman and Riddle (2005, p. 166) define betweenness centrality as an indicator of power because it “characterizes actors as having positional advantage, or power, to the extent that they fall on the shortest (geodesic) pathway between other pairs of actors. The idea is that actors who are “between” other actors, and on whom other actors must depend to conduct exchanges, will be able to translate this broker role into power.” Therefore, we interpret this measure as a “potential power”. Following this line of reasoning and achieving our goals, we suppose that (HP2): “the enlarged collusion is more likely in companies with more potential power than effective power”.

For enlarged collusion, we mean the extension of the network of shared administrators, beyond its own ownership structure or business sector. The extension of the network beyond these lines potentially gives the possibility to obtain necessary resources for a greater competitive advantage. These are links that are not limited to strengthening structural ties but which allow to exercise influence and to act as a broker among the information flows of the network. This because the companies with high *betweenness centrality* will have a privileged position when acting as intermediaries between companies without direct connections and, in this case, the interlocking directorates are able to potentially influence board’s decisions (Battiston et al., 2003).

3. RESEARCH METHODOLOGY

Our database consists of directors sitting on the Italian listed company boards (FTSE MIB 40) on 31 December 2016. A study of interpersonal ties existing among the firms of the sample was conducted by examining the composition of their governing bodies, the board of directors, when adopting a traditional or monistic governance model and the management board, when adopting a two-tier model (for BPM, STM, UBI Banca). The analysis is broken down into two distinct sections: first, we took the study by Drago et al. (2011) to update the network of cross-ownerships in Italian listed companies (FTSE MIB) and we examined the entire network of cross-shareholdings of at least 3% of total voting rights³. The relevant shareholdings led us to create three different clusters: 50% of the

sample is equally represented by Mediobanca Galaxy (10 companies) and State-controlled companies (10 companies); it was not possible to associate the remaining 50% to one or more proprietary structure, so it has been grouped in Clusters of Remaining “Blue Chips”.

In the second part of the analysis, we employed the Social Network Analysis applied to the Interlocking Directorates (De Nooy et al., 2005) to examine the structural and centrality aspects of the company network. Then, we used a set of indicators applied at the network level and at the firm level (Table 2).

Table 2. A set of indicators

Measures Name	INTERPRETATION
Firm level	
DEGREE OF CENTRALITY	How many neighbours each node has.
BETWEENNESS CENTRALITY	Value of betweenness centrality means a crucial role played by the company as a key actor in the network connection and as a key broker in the exchange of information and resources.
EIGENVECTOR CENTRALITY	The board's well-connectedness based on the well-connectedness of its direct links
Network level	
NETWORK DENSITY	Is equal to the number of lines in a network expressed as a proportion of the maximum number of possible lines
AVERAGE DEGREE	The average number of connections between businesses within the network.

The firm level analysis enabled us to investigate the strategic position chosen. The first set of measures we took into account is related to centrality, which is measured through the “degree of centrality” showing how many neighbours each node has. A higher degree value indicates that a firm has a relatively high number of links with other firms and it is, therefore, more central in the interlocking directorates’ network; through “betweenness centrality” the intermediary position of a node with respect to the information flow passing through the network has been assessed. A high value of betweenness centrality means a crucial role played by the company as a key actor in the network connection and as a key broker in the exchange of information and resources. Finally, through the “eigenvector centrality,” we measured the board’s well-connectedness based on the well-connectedness of its direct links. This measure can be interpreted as capturing the notions of power and prestige (Larcker et al., 2011)

At the network level, we used “network density” and “average degree” to verify the idea that more ties between interlocking directorates lead to a tighter structure. The first indicator is equal to the number of lines in a network, expressed as a proportion of the maximum number of possible lines (De Nooy, et al., 2011). This indicator describes the part of potential connections that is effective; the range is 0-1 (from when there are no actual connections to when all nodes are connected to each other). Density is usually defined as the average force of the links between all possible connections; intuitively we can conclude that the density of a network is inversely proportional to the size of the network. The latter indicates the average number of

³ The threshold for the communication of shareholdings in listed companies is 3% after Law Decree from 15 February 2016, n. 25 (Directive 2013/50/EU of the European Parliament and of the Council of 22 October 2013 amending Directive 2004/109/EC of the European Parliament and of the Council on the harmonisation of transparency requirements in relation to information about issuers, whose securities are admitted to trading on a regulated market, Directive 2003/71/EC of the European Parliament and of the Council on the prospectus to be published when securities are offered to the public or admitted to trading and Commission Directive 2007/14/EC laying down detailed rules for the implementation of certain provisions of Directive 2004/109/EC Text with EEA relevance)

connections between businesses within the network. The indicator is calculated by comparing the total number of connections in the graph to the total number of nodes that are part of it; the average density increases at the increase of the average degree of connectivity.

The graphic representation of the network structure is defined as “sociogram” and it is composed of vertices – representing companies – and edges – representing the links between two or more companies. The direction and strength of the links were not considered in the analysis and the result is an indirect type graph. In the event of directors with more than 2 positions, the links between companies were considered separately (having A, B and C as companies chaired by the same Director the links considered were: A-B, B-C, C-A). A limit of this specific type of graph that excludes the direction of links is that it does not allow identifying the type of interlocking directorates in the object (Bianco & Pagnoni, 1997). Vice versa, the exclusion of the force of link does not imply relevant limitations; the weight potentially attributable to the link was replaced by a number of lines equal to the number of interlocked directors. The weight of the edges could be anyway measured as the number of lines connecting two nodes. Two nodes are connected by an arc if the two nodes/firms share one director:

every link between two nodes is a shared director. Finally, we used a one-mode network for the companies to establish the relational structure between businesses. The Gephi software was used to calculate the key synthetic network indicators and to obtain a graphic representation of the network. Gephi is an open-source program available at www.gephi.org.

4. RESULTS

Compared to 2008 a reduction of the leading role of Mediobanca Galaxy in terms of cross-shareholdings was reported, dropping from 16 companies to 10 in 2016 (Figure 1 and Table 3). Vice versa, an increase in the number of companies belonging to the Cluster of remaining Blue Chips was observed, which has risen from 16 to 20. When focusing on the families, it can be observed that the Berlusconi's still keep a role in Mediobanca Galaxy, both via Mediolanum (controlled by Fininvest) and Mediaset. The families Ligresti (with La Fondiaria and Impregilo) and Pesenti (with Italcementi) are no longer part of the Galaxy, whereas Vincent Bolloré, having shares both in Telecom and Mediaset (along with Generali) entered the Italian network.

Table 3. Cluster comparison 2008 vs 2016

	<i>Number of Companies</i>	<i>Name of Companies</i>	<i>Market cap. %</i>	<i>N° interlocking directorate intra cluster</i>
<i>Cluster 2008 (Drago et al., 2011)</i>				
Mediobanca Galaxy	16	Alleanza; Atlantia; Autogrill; Impregilo; Italcementi; La Fondiaria; Lottomatica; Mediobanca; Unicredit; Generali; Mediolanum; Telecom; Intesa San Paolo; Mediaset; Mondadori; Pirelli	36	43
State Controlled Blue Chips	8	A2A; Enel; ENI; Finmeccanica; Saipem; Snam; STM; Terna	33	0
Remaining Blue Chips	16	Banca Popolare; BPM; Bulgari; Buzzi; Fastweb; Fiat; Geox; L'Espresso; Luxottica; MPS; Parmalat; Prysmian; Seat; Tenaris; UBI; Unipol	12	8
<i>Cluster 2016</i>				
Mediobanca Galaxy	10	Banca Generali; Finecobank; Generali; Intesa San Paolo; Luxottica; Mediaset; Mediobanca; Mediolanum; Telecom Italia; Unicredit	27	5
State Controlled Blue Chips	10	A2A; Enel; ENI; Italgas; Leonardo; Poste Italiane; Saipem; Snam; STM; Terna	32	4
Remaining Blue Chips	20	Atlantia; Azimut; BPER; BPM; Brembo; Buzzi Unicem; Campari; CNH; Exor; FCA; Ferrari; Moncler; Prysmian; Recordati; Salvatore Ferragamo Tenaris; UBI; Unipol; UnipolSai; Yoox	21	20

The biggest-sized cluster in 2016 was the Cluster of Remaining Blue Chips. In it, it should be pointed out the presence of a new Galaxy defined as “nano galaxy Exor”, made of the families of the group of the Agnelli's, both for the number of cross-shareholdings and of shared directors.

The results (Figure 1) confirm a negative declining trend of interlocking directorates inside the Mediobanca Galaxy, as already described in Drago et al. (2011), the number dropped from 43 to only 5 interlocking directorates. The same reduction is observable also in the link between Mediobanca Galaxy and two other clusters; particularly in the case of “state-controlled blue chips” a reduction from 10 to 3 interlocking directorates has been reported and from 21 to 5 in the case of the “remaining blue chips”. An interesting result sees the presence of interlocking directorates also within the “state-controlled blue chips” cluster, in the

number of 4 compared to the 0 in 2008. In the cluster of the Remaining Blue Chips to conclude, a number of 20 interlocking directorates has been reported, compared to the 8 in 2008. An increase is observable also in the number of interlocking directorates existing between the “state-controlled blue chips” and the “remaining blue chips” equal to 9 compared to the 2 reported in 2008.

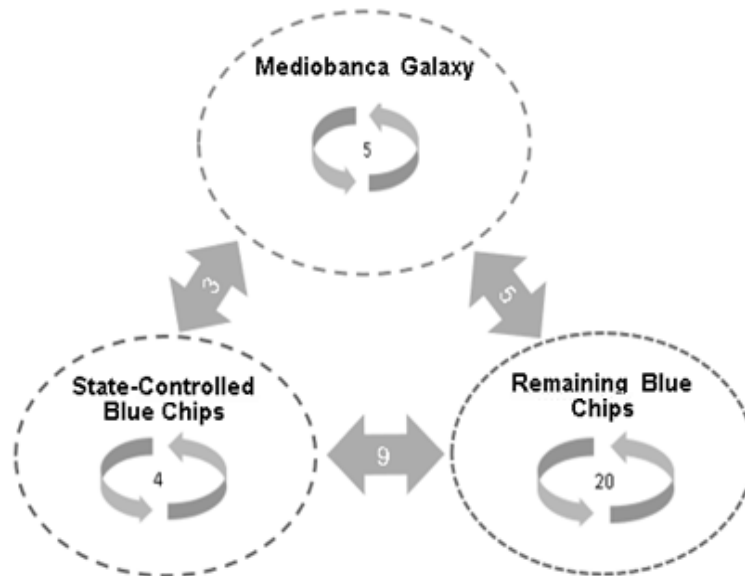
These figures push us to observe a reduction of the number of intra- and inter-cluster links, which implies a reduction of the network diameter and the centrality of a single actor (Mediobanca), thus favouring the appearance of a greater number of “centers of power” others from Mediobanca. Given the above, it can be highlighted that the highest number of interlocking intra clusters is reported inside the cluster of the remaining Blue Chips, where, with the exception of the Nano Galaxy Exor,

no prevailing ownership structure is clearly observable.

Therefore, our first hypothesis results are not supported since a reduction in the number of links between Mediobanca galaxy and the others cluster as well as a new galaxy can be recognized in the Italian network (the Nano Galaxy Exor). The reduction of Mediobanca Galaxy can definitely be

ascribed above all to the effect of the recently entered legislation, successive to Drago's study, concerning the introduction of restrictions to the financial sector due to the occurrence of the phenomena of the interlocking directorates (article 36 D.L. 2011/201, as successively amended by Law 2011/214).

Figure 1. The three building blocks (directors) at 31 December 2016



After the first part of the analysis, we calculated a one-mode network for the companies to establish the structure of links existing between firms. Figure 2 in the Appendix shows the interconnections between firms in the Italian listed companies.

The obtained graph shows 40 nodes representing the single companies' part of the sample, 46 links among their boards of directors with the participation of 33 shared board members. The difference obtained between the number of interlocking directorships and that of shared board members involved is given by the assignment of more than one position to some members of the board.

At the network level, the analysis (Table 4) reported a not too high average degree (equal to 2,3) and a 5,6% density, showing that we are far from a full configuration of the graph, which allows us to assume a high vulnerability of the network.

Table 4. Measures at the network level

Measure	Value
Average Degree	2,3
Network Density	5,6%

Below the values obtained with a ranking per cluster (Table 5).

Table 5. Measures at network level per cluster

Cluster	Nodes	Edges	Average Degree	Network Density
Mediobanca Galaxy	10	5	1	13,9
Rimanenti Blue Chips	20	20	2	5,3
State Controlled Blue Chips	10	4	0,8	4,4

The percentage of networks density informs about how fast information circulates in the network and it seems that, despite the lower number of interlocking directorates, the flow of information is faster inside the Mediobanca galaxy, which is probably due to the effect of cross-shareholding. As for density, a lower percentage in Mediobanca Galaxy can be observed, as opposed to the Remaining blue chips.

The results of the measurement of centrality at firm level are reported in Table 6.

Our results show that not all the firms reporting the highest value of eigenvector centrality also show the highest value of betweenness centrality. Therefore, some firms are central because they are highly connected and other firms are more influential in acting and controlling the information.

Table 6. Centrality measures at the firm level

	<i>Firm</i>	<i>Cluster*</i>	<i>Degree Centrality</i>	<i>Eigenvector centrality</i>	<i>Betweenness centrality</i>
1	A2A	State Controlled BC	3	0	0
2	Atlantia	Remaining BC	2	0,134	1
3	Azimut	Remaining BC	0	0	0
4	Banca Generali	Mediobanca G	0	0	0
5	Mediolanum	Mediobanca G	0	0	0
6	BPM	Remaining BC	0	0	0
7	Bper	Remaining BC	1	0	0
8	Brembo	Remaining BC	5	0,149	0
9	Buzzi	Remaining BC	2	0,149	0
10	Campari	Remaining BC	3	0,386	1
11	CNH	Remaining BC	2	0,404	0
12	Enel	State Controlled BC	1	0	0
13	Eni	State Controlled BC	3	0,163	4
14	Exor	Remaining BC	5	0,598	0,5
15	FCA	Remaining BC	5	1	0
16	Ferrari	Remaining BC	6	0,698	2,5
17	Finecobank	Mediobanca G	2	0,151	4
18	Generali	Mediobanca G	3	0,203	0
19	Intesa San Paolo	Mediobanca G	3	0	0
20	Italgas	State Controlled BC	3	0,301	0
21	Leonardo	State Controlled BC	0	0	0
22	Luxottica	Mediobanca G	2	0	0
23	Mediaset	Mediobanca G	0	0	0
24	Mediobanca	Mediobanca G	3	0,081	3
25	Moncler	Rimanenti BC	3	0,232	0
26	Poste Italiane	State Controlled BC	1	0,149	0
27	Prysmian	Remaining BC	3	0,232	0
28	Recordati	Remaining BC	1	0,081	0
29	Saipem	State Controlled BC	4	0,444	0
30	Salvatore Ferragamo	Remaining BC	0	0	0
31	Snam	State Controlled BC	3	0,165	0
32	STM	State Controlled BC	0	0	0
33	Telecom	Mediobanca G	5	0,458	3
34	Tenaris	Remaining BC	2	0,149	0
35	Terna	State Controlled BC	2	0,218	0
36	UBI	Rimanenti BC	0	0	0
37	Unicredit	Mediobanca G	0	0	0
38	Unipol	Remaining BC	5	0	0
39	UnipolSai	Remaining BC	6	0,794	0
40	Yoox	Remaining BC	3	0,386	3

Note: * Mediobanca Galaxy; Remaining Blue Chips; State Controlled Blue Chips

The results show that the top 10 firm with the highest potential power is the following (Table 7): Eni, Finecobank Telecom, Yoox, Mediobanca, Ferrari, Campari, Atlantia, Exor. These companies are therefore key actors or “center of power” through which the biggest amount of information flows and which allow a higher connection of the entire network. From the perspective of enlarged collusion, among companies with a higher betweenness centrality are identified some “centers of power”. These companies have connections that go beyond their own ownership structure or sector and since

powerful from the point of view of network's connections, have a greater possibility of exploiting the information flows intercepted. These companies can take advantage of information management. This result supports our HP2. The top 10 companies with an effective power are (Table 8): FCA, UnipolSai, Ferrari, Exor, Telecom, Saipem, CNH, Yoox, and Campari. In this case, the historical presence of family groups that has influenced directors' appointments and family ownership, have created a specific network structure, a “nano galaxy Exor”.

Table 7. Top 10 firms by Betweenness centrality

<i>Firm</i>	<i>Category</i>	<i>Betweenness centrality</i>
Eni	State Controlled BC	4
Finecobank	Mediobanca G	4
Telecom	Mediobanca G	3
Yoox	Remaining BC	3
Mediobanca	Mediobanca G	3
Ferrari	Remaining BC	2,5
Campari	Remaining BC	1
Atlantia	Remaining BC	1
Exor	Remaining BC	0,5

Table 8. Top 10 firms by Eigenvector centrality

<i>Firm</i>	<i>Category</i>	<i>Eigenvector centrality</i>
FCA	Remaining BC	1
UnipolSai	Remaining BC	0,794
Ferrari	Remaining BC	0,698
Exor	Remaining BC	0,598
Telecom	Mediobanca G	0,458
Saipem	State Controlled BC	0,444
CNH	Remaining BC	0,404
Yoox	Remaining BC	0,386
Campari	Remaining BC	0,386

5. DISCUSSION

The results discussed in the previous section led us to the following remarks:

First, it is evident that, compared to the data used by Drago et al. 2011, relevant changes have occurred, both in the Mediobanca Galaxy and in the links among the listed companies on Italian stock market. More specifically, it can be observed: i) a sensitive reduction of the number of interlocking directorates inside Mediobanca Galaxy; ii) a reduction of the interlocking directorates between Mediobanca galaxy and the remaining cluster; iii) an increase of the interlocking directorates among the state-controlled companies and the remaining companies. Even in the perspective of an enlarged collusion, the position assumed by the controlling group of the Mediobanca Galaxy was definitely downsized (Baccini & Marroni, 2016). Mediobanca and its Galaxy in 2008 were holding 43 interlocking directorates out of a total of 84, while in 2016 only 5. This reduction is due to a removal of a significant network of holdings and most likely also to a change in the threshold for the communication of shareholdings in listed companies.

Secondly, the synthetic indicators examined – which would require a separate further study and a validation by expanding the collected data – appear to underestimate the existence of a dense network of interlocking directorates among Italian companies. This would be in line with those studies that support the idea of an ongoing gradual reduction of the phenomenon of directors' sharing on the national scene (Mizruchi, 2017). More specifically a low “average degree” can be observed, along with a low density of connections. This result confirms the findings of Fattobene et al. (2017) according to whom both the crisis and the new legislation have had an impact on the phenomenon of interlocking directorates. We would also suggest that the greater presence of institutional foreign investors on Italian market, a broader participation to the meetings' quorum and more generally, a greater attention to the minorities and the engagement shares (also following the Shareholder Right Directive) in Italy (Esposito De Falco et al., 2017), along with the changes introduced by the legislation into the financial sector, contributed to an improvement of Italian governance and to discourage the occurrence of intense phenomena of interlocking directorates. We do believe that the same list voting system – a slate voting system for the nomination and election of the Board of Directors and the Board of Statutory Auditors – could be a highly innovative solution not only to protect the interests of minority stakeholders but also, probably, to discourage interlocking directorates. If we pay attention to the name of interlocking directorates sitting on more than one board, they are elected by the controlling shareholders (Appendix – Table 9). The director sitting on the highest number of boards is Sergio Marchionne, who sits in CNH, Exor, Ferrari and FCA. John Elkan, like Marchionne, seats in three firms of the same (own) group. These links among companies belonging to the same business group are an expression of the de facto control relationships. Yunpeng HE would appear as the interlocking directorate chosen by the State (via Cassa Depositi

Prestiti) in at least three state-controlled firms. This led us to point out that Assogestioni (and generally speaking the minority shareholders) are more careful when choosing the directors in order to avoid creating situations favourable to interlocking directorates, as opposed to the controlling shareholders.

Third, in order to find an answer to our research question, we considered eigenvector as an “effective power”, while betweenness as a “potential power”. This allowed us to identify, in the Italian scenario, some companies with an effective power and some others enjoying a potential power. We assumed that firms who are “between” other firms and on which other firms need to depend to conduct exchanges, will be able to translate this broker role into a potential power and to increase the enlarged collusion. The potential power shows us the possibility of intercepting information flows but it can be difficult to extract the related competitive advantage, due to the divergence of ownership structure and business sector. We also observed that the effective power is stronger, when in presence of a shared ownership of the companies. In this specific case, the companies are part of the “nano galaxy Exor” and apparently the controlling shareholders seem to create a network in order to protect their private benefits of control to the detriment of minority shareholders.

In conclusion, interlocking directorates, thus, highlight the embeddedness perspective of corporate governance (Davis, 1996), that emphasizes that *“it's not what you know, but who you know”* and *“it's not even who you know, but who they know”*. This matters for corporate governance often more than the individual expertise and the incentives. This interpretation would anyway depend on the specific governance culture of a company and the context in which it operates. In this regard, it should be here highlighted that the Italian and European legislative innovations⁴, particularly in the Banking and insurance sectors, tend to limit this interpretation. In fact, in order to grant a proper satisfaction of their functions, the Members of the Board should have the professionalism required to perform their task and fit the operations and the size of the company (particularly for banks). These provisions make sure that the shareholders when selecting the directors, pay a special attention to these aspects.

6. CONCLUSION

There is a very large literature dealing with interlocking directorates on sociology, economics, management science among other fields. In this paper, we want to contribute to the literature on directors interlocks by examining the profile of the main board interlockers that the Italian director network is formed of and by verifying to what extent director networks correspond to ownership

⁴ Bank of Italy, Supervisory Instructions for Banks – circular no. 285 dated 17 December 2013 and update 6 May 2014, on corporate governance; Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms (CRD IV) – Articles 76, 88, 91, 95; EBA guidelines on internal governance (2016); EBA/ESMA joint guidelines on the assessment of the suitability of members of the management body and key function holders (2016); ECB guide to fit and proper assessments (2017); Italian Legislative Decree 39/10 as amended (Italian Legislative Decree 135/16) – Article 19.

networks, comparing and updating the results by Drago et al. (2011). In addition, this paper also aims at understanding, how interlocking directorates can contribute to understanding the power forms. Interlocking directorates are subject to restrictions in some modern economies and the discussion whether the Europe Union should adopt some restrictions is open. In particular, Italy has prohibited interlocking directorates among financial companies since 2011 although interlocking directorates have been an important feature of Italian capitalism. Therefore, Italian context remains a suitable candidate for the analysis of its interlocking directorates. Our results show a sensitive reduction of the number of interlocking directorates inside Mediobanca Galaxy and an origin of new Galaxy Exor.

In addition, to the best of our knowledge, nobody has interpreted eigenvector and betweenness centrality as effective and potential power of firms, and through this form of power a relationship with enlarged collusion. These considerations - that would require a deeper analysis based on a broader sample of companies and a longer observation period - provide some important contributions to corporate governance literature and to policymakers.

First, by using social-network analysis we measured the degree, eigenvector and betweenness centrality, measures that give the value of power, prestige and ability to receive information by a firm. From our limited point of view, our suggestion was to consider eigenvector as "effective power" and betweenness as "potential power". In this way, we provide a framework for selecting Italian firms with effective and potential power - around whom interactions and processes can be traced and analysed, carrying out a "quantitative" and "qualitative" analysis.

Second, a strong control position on behalf of the ownership of the firm (i.e. Agnelli family) makes interlocking directorates as a "legal device", in order to support the block-holder position. This conclusion, on the one hand, may seem obvious, on the other hand it could contribute to a better understanding of the actions (and ways) of the controlling shareholders to the detriment of

minority shareholders, especially in a context with a strong concentration of ownership like the Italian one (Sancetta et al., 2018).

Third, this research shows that Italian interlocking directorates are proposed by controlling shareholders and not by minority shareholders. Therefore, taking into account the accumulation of their professional duties as a relevant factor for the efficacy of their decisions, we can suggest considering that the benefits of interlocking may not compensate for the deterioration in the quality of decision and monitoring capacity of these professionals.

Our research provides also some policy recommendations. If interlocking directorates are a symptom of cross-shareholding (Drago et al., 2015), in order to protect minority shareholders a reform and regulation would be advisable, that do not break interlocking directorates in general, but rather a reform aiming at breaking the interlocking directorates in the specific case of cross-shareholding. In this regard, a stricter regulation would be desirable on the number of other positions covered. New rules and mechanisms of control should be rethought with a view to reducing the potential of extraction of private benefits by the controlling coalitions, particularly the pecuniary and the high transferable ones.

Our results, however, should be interpreted with caution due to some limitations. First, our sample is only made of Italian listed companies in FTSE MIB and our analysis is not dynamic. As a result, its outcomes probably underestimate the occurrence of board interlocking. Second, we divided the cluster by cross-shareholding as made by Drago et al. (2011), but we cannot completely guarantee that no another method exists to create clusters in the Italian scenario. Suggestions for future research include empirical studies to explore the relations between board interlocking and firm strategy and governance systems. Understanding how and to which extent "galaxy" can influence empirically the market and the governance strategy (for example private benefit of control) or effective power of interlocking directorates could help to improve our study.

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APPENDIX

Table 9. List of directors with more than one assignment

Directors	N° assignment FTSE MIB	Firms		
Sergio MARCHIONNE	4	CNH	Exor	Ferrari
Maria Elena CAPPELLO	3	A2A	Prysmian	Saipem
Gianfelice ROCCA	3	BREMBO	Buzzi Unicem	Tenaris
Diva MORIANI	3	ENI	Moncler	Generali
John ELKANN	3	Exor	Ferrari	FCA
Yunpeng HE	3	Snam	Italgas	Terna
Michaela CASTELLI	2	A2A	Recordati	
Fabio CERCHIAI	2	Atlantia	UnipolSai	
Gilberto BENETTON	2	Atlantia	Mediobanca	
Barbara BORRA	2	BREMBO	Italgas	
Giovanni CAVALLINI	2	Brembo	Poste Italiane	
Catherine Gerardin VAUTRIN	2	Campari	Yoox	
Carlo CIMBRI	2	Unipol	UnipolSai	
Maria Patrizia GRIECO	2	Enel	Ferrari	
Pierluigi STEFANINI	2	Unipol	UnipolSai	
Francesco BERARDINI	2	Unipol	UnipolSai	
Ernesto DALLE RIVE	2	Unipol	UnipolSai	
Nicla PICCHI	2	UnipolSai	Saipem	
Andrea AGNELLI	2	Exor	FCA	
Pietro GUINDANI	2	ENI	Fincobank	
Pietro FERRARI	2	BPER	Ferrari	
Alessandro FOTI	2	Fincobank	Yoox	
Flavio CATTANEO	2	Generali	Telecom Italia	
Paolo COLOMBO	2	Intesa San Paolo	Saipem	
Giorgina GALLO	2	Intesa San Paolo	Telecom Italia	
Francesca CORNELLI	2	Intesa San Paolo	Telecom Italia	
Elisabetta MAGISTRETTI	2	Luxottica	Mediobanca	
Luciano SANTEL	2	Luxottica	Moncler	
Tarak Benn AMMAR	2	Mediobanca	Telecom Italia	
Monica DE VIRGILIIS	2	Snam	Prysmian	
Giuseppe RECCHI	2	Telecom Italia	UnipolSai	
Robert KUNZE-CONCEWITZ	2	Yoox	Campari	
Umberto Carlo Maria NICODANO	2	Brembo	Poste Italiane	

Figure 2. Graph of the Italian corporate network at the end of 2016

